Research Article **Open Access**

The relationship between screen time and quality of life among Iraqi adolescents: A cross-sectional study

Mohammed Abdulaali Ibrahim [1], **Khamees Obaid Bandar Obaid** [2]*

[1] ALnajaf Health Directorate, AL Haydarya Hospital, Iraq
[2] Pediatric Nursing Department, College of Nursing, University of Kerbala, Kerbala, Iraq

* **Corresponding author: Khamees Obaid Bandar Obaid**, Pediatric Nursing Department, College of Nursing, University of Kerbala, Kerbala, Iraq. **Email:** bkhamees@yahoo.com

Abstract

Background: Excessive screen time (ST) has been linked to a range of negative health outcomes, including diminished quality of life (QOL) and adverse physical and psychological conditions.

Objectives: This study aimed to explore the relationship between excessive ST and the QOL among adolescents in Iraq.

Methods: We conducted a cross-sectional study involving 387 secondary school students from Al-Najaf Al-Ashraf, Iraq. Data collection took place from December 29, 2023, to March 3, 2024, utilizing a self-report questionnaire that included demographic information, the KINDL questionnaire for assessing QOL, and a Questionnaire for ST among Adolescents. We employed descriptive statistics, the Pearson correlation coefficient, and linear regression analysis to interpret the data.

Results: A considerable number of participants (55.6%) reported spending over 10 hours per day on screens, while the majority (78%) indicated a moderate level of QOL. The Pearson correlation analysis revealed significant inverse relationships between daily ST and various domains of QOL, including physical well-being (P=0.022), emotional well-being (P=0.029), and everyday/school functioning (P=0.002). Additionally, regression analysis indicated that factors such as gender, age, marital status, and maternal education significantly influenced the QOL of the students.

Conclusion: Our findings suggest that higher levels of ST are associated with poorer physical, emotional, and academic functioning among adolescents. Future research employing longitudinal designs and more representative samples is essential to establish causal relationships and inform effective interventions.

Keywords: Screen time, Adolescents, Quality of life.

Introduction

Digital devices have profoundly transformed the lifestyles of adolescents. With the increasing prevalence of smartphones, tablets, and computers, young people are dedicating more time to screen-based activities.[1] This surge in screen time (ST) has raised significant concerns among parents, educators, and healthcare professionals regarding its potential effects on the physical, psychological, and social well-being of adolescents, as well as their overall quality of life (QOL).[2,3]

QOL is a multifaceted concept that plays a crucial role in assessing an individual's perceived functioning and is considered a vital health outcome for children and adolescents.[4,5] Various factors -including age, gender, living environment, socioeconomic status, smoking habits, physical activity levels, and ST-can influence QOL.[6,7]

Research indicates that prolonged ST is linked to reduced physical activity, an increased risk of obesity, poor dietary habits, cardiovascular issues, sedentary behavior, poor posture, and eyestrain.[8-10] These factors can have serious implications for the long-term health of adolescents, potentially elevating their risk for chronic conditions such as diabetes and heart disease.[11] Furthermore, excessive ST has been associated with poor sleep quality and disrupted circadian rhythms, which can exacerbate physical health challenges.[12-14]

In addition to physical health concerns, excessive ST is correlated with psychological issues such as heightened stress, anxiety, depression, feelings of loneliness, and

impaired cognitive development.[15-18] It can also hinder adolescents' social interactions, diminishing their sense of connection with peers and family members and leading to feelings of isolation and withdrawal.[19] These adverse effects on both physical and mental health can significantly impact the overall quality of life for adolescents, affecting their social engagement, academic performance, and general well-being.[20] Notably, research has shown that children and adolescents who consume media within an hour of bedtime tend to experience a lower quality of life.[4] Studies have highlighted the complex relationships between ST and various health and academic outcomes, revealing the intricate connections between digital engagement and developmental trajectories.[21]

The COVID-19 pandemic has further intensified this reliance on screens for education, socialization, and leisure activities, significantly impacting the quality of life for many adolescents.[21]

Despite these findings, there remains a knowledge gap in the literature regarding the consistent definition and measurement of quality of life in relation to ST among adolescents.[22] Some studies utilize subjective measures of QOL, such as self-reported life satisfaction, while others rely on objective metrics like academic performance or social relationships.[23] This inconsistency complicates efforts to draw definitive conclusions about how ST affects overall quality of life in this population. Additionally, much of the existing research focuses on short-term outcomes, leaving a gap in understanding the long-term consequences of excessive ST on quality of life.

There are ongoing debates in the research community regarding the strength and nature of the relationship between ST and the QOL among teenagers. While some studies indicate that excessive ST is linked to a decline in quality of life,[24] others report no significant relationship or even suggest a positive association.[25] These conflicting findings may stem from differences in sample characteristics, research methodologies, measurement techniques, and the variables controlled for in the studies.[26,27]

Given these uncertainties, it is crucial to gain a comprehensive understanding of how ST impacts the quality of life during adolescence, particularly since young people are especially susceptible to its negative effects. In Iraq, adolescents face unique challenges related to excessive ST that further influence their quality of life. The widespread availability and affordability of digital devices and internet access have made it easier for them to spend long hours in front of screens.[28] Many young people engage with screens for both entertainment and educational purposes. Additionally, ongoing political instability and conflict have heightened their reliance on technology for communication and leisure activities.

The absence of guidelines or regulations regarding ST in the country raises concerns about its potential detrimental effects on adolescent well-being. Excessive ST can contribute to reduced physical activity, poor sleep quality, and social isolation.[29] Furthermore, limited access to outdoor spaces, a lack of community resources for healthy activities, and insufficient mental health support services exacerbate the negative impacts on adolescents' quality of life in Iraq.[30,31]

Considering these contextual factors, it is essential to conduct research aimed at better understanding the relationship between excessive ST and quality of life among Iraqi adolescents. Such insights can help identify strategies to mitigate the potential adverse effects of screen use on their overall well-being.

Objectives

The primary goal of this study is to explore the potential correlation between excessive ST and the quality of life among adolescents.

Methods

Study design and participants

A cross-sectional survey was conducted in secondary schools in Al-Najaf Al-Ashraf City, Iraq, from December 29, 2023, to March 3, 2024. To determine the sample size, we employed a formula for estimating proportions in a finite population. Given that the population proportion of excessive ST was unknown, we used 0.5 to estimate the maximum sample size. The study population consisted of approximately 25,000 students. With a desired margin of error of 5% and an alpha level of 0.05, we calculated that 387 students were required for this study [Formula 1]. To account for potential dropouts, we aimed to recruit 420 students using a convenience sampling method.

$$n = \frac{N \left(Z_{1-\alpha/2}^2 \cdot p \cdot q \right)}{(N-1) \cdot d^2 + Z_{1-\alpha/2}^2 \cdot p \cdot q}$$

Formula 1. Sample size calculation formula

Inclusion criteria for participation included being a secondary school student of either gender and obtaining parental consent. Additionally, to ensure the reliability of our findings related to QOL,[32] we excluded students with chronic conditions such as cancer, hypertension, diabetes, visual impairments, depression, and other mental health disorders, whether self-reported or documented in school

records. The only exclusion criteria were incomplete questionnaire responses and the presence of illnesses.

Data collection instruments

The study utilized a three-part questionnaire. The first section gathered demographic information about the students, including age, gender, grade level, parents' education and occupation (employed or unemployed), and approximate family income.

The second part of the questionnaire was the Questionnaire for Screen Time in Adolescents (QueST), developed by Knebel et al. This tool measures various ST activities such as studying, watching videos, playing electronic games, using social media, and engaging in work or internship-related tasks. It consists of five items asking respondents to report the number of hours spent on electronic devices during weekdays and weekends. The original developers reported a Content Validity Index (CVI) of 0.94 and intraclass correlation coefficients ranging from 0.24 to 0.76 for different ST activities.[33] In our study, the content validity of the Arabic translation of the QueST was confirmed by ten university professors. Furthermore, we established the reliability of the questionnaire with a correlation coefficient of 0.89 after administering it twice to ten students with a ten-day interval. We calculated average daily ST using the following formula: Average Daily Screen Time = ((Volume on Weekdays × 5) + (Volume on Weekend Days × 2))/7

The third part of the questionnaire comprised the KINDL health-related quality of life questionnaire. This instrument includes 24 items across six subscales: physical well-being, emotional well-being, self-esteem, family relationships, friendships, and everyday functioning. Respondents rated each item on a 5-point Likert scale ranging from "never" (1) to "always" (5). The total score is derived from summing the scores across all subscales, with each subscale yielding a score between 4 and 20. Higher scores indicate better quality of life, with total scores ranging from 24 to 120 categorizing QOL as low (24-59), medium (60-95), or high (96-120). Essaddam et al. evaluated the face validity, construct validity, concurrent validity, and reliability of the Arabic version of the KINDL questionnaire, reporting a Cronbach's alpha coefficient of 0.70, which indicates adequate internal consistency.[34] In our study, content validity was confirmed by experts, and pilot testing with ten secondary school students yielded a Cronbach's alpha of 0.85 for the KINDL questionnaire.

Procedures

To conduct this study, we employed a multistage sampling method. Initially, we collaborated with the Al-Najaf Directorate of Education to compile a comprehensive list of secondary schools in the area. From this list, we randomly selected 10 schools and established quotas based on the total sample size and the number of students enrolled in each institution. During regular school hours, the lead researcher visited each school to seek permission from the administration to engage with students during their breaks.

After explaining the objectives of the study, the researcher invited interested students to participate and provided them with the study questionnaire upon receiving their consent. Students were instructed on how to complete the questionnaire in a quiet and private setting during their free time in class or during breaks, depending on the school's schedule. The completed questionnaires were returned directly to the researcher on the same day.

Data analysis

Data analysis was conducted using SPSS software version 20. We described participants' characteristics using frequency and percentage statistics. To explore the relationship between ST as an exposure variable and QOL as an outcome variable, we utilized the Pearson correlation coefficient. Additionally, we examined factors influencing QOL through linear regression analysis, incorporating ST and demographic data as independent variables.

In selecting variables for regression analysis, we initially employed a forward selection technique. Subsequently, we applied a backward method to reintroduce all variables with a significance level of 0.2 or lower into the model. Prior to executing the regression analysis, categorical variables were transformed into dummy variables. A "P value" less than 0.05 was considered significant in all analyses.

Ethical considerations

The study received approval from the Ethics Committee of the College of Nursing at the University of Kerbala on October 28, 2022, under approval number UOK.CON.23.013. The College formally requested authorization from the Directorate General of Education for the Holy Al-Najaf Province and from the principals of the selected secondary schools to collect data. Written consent was obtained from each student, as well as from their parents or guardians, after they were informed about the study's purpose, data confidentiality measures, and their right to withdraw from participation at any time.

Results

Out of the 420 students surveyed, 387 completed the questionnaire in full, resulting in a response rate of

92.14%. The majority of participants were aged between 16 and 18 years, with an average age of 16.08±1.591 years. Among the respondents, 53% were male, and 28.9% were in their third year of secondary school. Additionally, 59.9% of the participants reported that their fathers were employed, while a significant majority (76.7%) indicated that their mothers were unemployed. Notably, over half of the students (55.6%) reported spending more than 10 hours per day on screens [Table 1]. Most participants (78%) rated their QOL as moderate [Table 2].

Table 1. Frequency distribution of participants based on demographic characteristics (n=387)

Demographic variable		N (%)
Age, year	<16	147 (38)
	16-18	215 (55.5)
	>18	25 (6.5)
Gender	Male	205 (53)
	Female	182 (47)
Grade	First	9 (2.3)
	Second	41 (10.7)
	Third	112 (28.9)
	Fourth	60 (15.5)
	Fifth	119 (30.7)
	Sixth	46 (11.9)
Father's **occupation**	Employed	232 (59.9)
	Unemployed	155 (40.1)
Mother's **occupation**	Employed	90 (23.3)
	Unemployed	297 (76.7)
Mother's **education**	Illiterate or low literate	279 (72.1)
	Higher education	108 (27.9)
Father's **education**	Illiterate or low literate	238 (61.5)
	Higher education	149 (38.5)
Family monthly income (Iraqi Dinar)	<300000	50 (12.9)
	300000-600000	88 (22.7)
	601000- 900000	95 (24.5)
	901000- 1200000	93 (24.1)
	>1200000	61 (15.8)
Average daily screen usage, hours	< 6	42 (10.8)
	6-10	130 (33.6)
	>10	215 (55.6)

The average ST among the students was 11.23±4.53 hours per day, and the mean QOL score was 78.34±13.51. Using Pearson correlation analysis, we found significant inverse correlations between daily ST and several domains of QOL: physical well-being (P=0.022), emotional well-being (P=0.029), and everyday/school functioning (P=0.002). However, no significant correlation was observed between ST and the overall QOL score (r=-0.057, P=0.132) [Table 3].

Table 2. Distribution of participants according to their quality of life

Domain	Quality of life		
	Low, n (%)	Moderate, n (%)	High, n (%)
Physical	88 (22.7)	197 (50.9)	102 (26.4)
Emotional	59 (15.3)	209 (54)	119 (30.7)
Self-esteem	48 (12.4)	199 (51.4)	140 (36.2)
Family	42 (10.9)	173 (44.7)	172 (44.4)
Friends	48 (12.4)	219 (56.6)	120 (31)
School	143 (36.9)	214 (55.3)	30 (7.8)
Total	30 (7.8)	302 (78)	55 (14.2)

Table 3. Correlation between participants' quality of life scores and their daily screen time

Quality of life domains	Screen time, r (P-value)
Physical well-being	-0.102 (0.022)
Emotional well-being	-0.097 (0.029)
Self-esteem	0.038 (0.226)
Family	0.030 (0.275)
Friends	0.057 (0.133)
Every day/school functioning	-0.148 (0.002)
Total Quality of life	-0.057 (0.132)

r: Pearson correlation coefficient

Regression analysis revealed that gender, age, marital status, and maternal education significantly influenced the students' QOL. The most impactful factors were age (β=0.644, P<0.001) and marital status (β=0.345, P<0.001). As shown in Table 4, age had a positive effect on the QOL score (P=0.001). Furthermore, males reported a higher QOL than females (P=0.003), single participants had significantly better QOL compared to their married counterparts (P<0.001), and those whose mothers had attained higher education levels reported better QOL than those whose mothers had lower educational attainment (P=0.03) [Table 4].

Discussion

Most students indicated that they spend more than 10 hours a day in front of screens. In a recent comparative study, 49.2% of Indonesian adolescents reported similar ST levels before the COVID-19 pandemic; this figure rose to 59.5% during the pandemic but dropped to 35.4% afterward.[35] While we did not investigate the ST habits of adolescents before and during the pandemic, our findings indicate that the rate of excessive ST among our participants is notably high.

Table 4. Results of the regression analysis identifying factors that influence quality of life

Model	Unstandardized Coefficients		Standardized Coefficients	t	P value	Adjusted r square
	B	Std. Error	Beta			
Gender, Male	4.336	1.466	0.040	2.957	0.003	0.969
Age, year	3.187	0.408	0.644	7.816	0.001	
Marital status, Single	27.612	5.199	0.345	5.311	0.001	
Grade	-0.948	0.690	-0.050	-1.374	0.170	
Mother's education, Higher education	4.582	1.622	0.030	2.825	0.005	

Interestingly, our sample consisted primarily of male participants, contrasting with the Indonesian study that had a predominantly female cohort, although both groups fell within a similar age range. A study conducted in China found that male adolescents were 4.55 times more likely than females to engage in excessive ST.[36] However, a systematic review indicated no significant gender differences in ST usage.[37]

Cultural factors may contribute to these disparities; for instance, in Iraq, boys often have greater access to technology-based activities such as smartphones, computers, and gaming consoles, which could lead to increased ST. In contrast, girls might be encouraged to participate in more social or physical activities. Further research is warranted to investigate the underlying causes of these gender differences. Excessive ST can diminish physical activity and social interactions, ultimately negatively affecting both physical and emotional well-being.[38,39] Therefore, it is essential to develop targeted strategies aimed at reducing excessive ST among both male and female adolescents.

The mean QOL among our students was found to be at a medium level. Interestingly, we did not observe a significant correlation between ST and overall QOL scores. This suggests that while general QOL may not be directly influenced by ST, specific aspects -such as physical activity, emotional well-being, and school engagement- are indeed affected by it. Our findings contrast with those of Twenge and Campbell, who reported negative correlations between ST and both overall and psychosocial QOL.[40] However, Borras et al. explored the relationships among QOL, physical activity, and ST, concluding that certain domains of QOL might be more susceptible to these factors.[24]

Supporting our results, previous research has established a connection between excessive ST and issues such as physical inactivity, diminished emotional well-being, and reduced participation in school activities.[41,42] High levels of ST have been associated to lower physical activity,

fostering a sedentary lifestyle that can adversely affect overall health. Additionally, excessive screen use has been associated with increased feelings of loneliness, anxiety, and depression, all of which can negatively impact emotional well-being.[40] Furthermore, spending too much time on screens may detract from school engagement, potentially affecting academic performance and satisfaction. The lack of a significant association between total QOL scores and ST implies that ST alone may not determine an individual's overall quality of life. Other factors, including social support, mental health, and physical activity, likely play crucial roles in shaping an adolescent's well-being. The differences observed between studies could stem from variations in methodology or the specific characteristics of the adolescent populations examined.

Our regression analysis revealed that factors such as gender, age, marital status, grade level, and maternal education all significantly impacted students' QOL. Notably, age and marital status emerged as the most influential factors, indicating that older students and those who are married tend to report a higher QOL compared to their younger or single counterparts. These findings align with previous research highlighting age and marital status as key predictors of quality of life.[43]

There are several limitations to consider. Firstly, this study was conducted in a single city in Iraq, which may restrict the generalizability of our findings to other contexts or rural areas. Secondly, the cross-sectional design limits our ability to establish causal relationships between variables. Additionally, as with any survey-based research, response bias and social desirability bias may have influenced the results despite our efforts to ensure anonymity. Socioeconomic status, cultural background, and religious beliefs could also affect students' ST and QOL; however, these factors were beyond the scope of this study. Moreover, we did not differentiate between types of screens used, which may have varying effects on users. Future research could investigate how different types of

screen engagement impact students' quality of life. Lastly, this study did not account for other potential influences such as physical activity levels or sleep patterns in relation to ST and QOL. Incorporating these variables in future studies could provide a more comprehensive understanding of the factors affecting children's quality of life concerning ST.

Conclusions

This study highlights the association between ST and QOL among adolescents in Iraq. While we did not find a statistically significant overall association, our analysis revealed that increased ST is associated to poorer physical health, emotional well-being, and school functioning. These findings highlight the urgent need for targeted interventions that promote a healthier balance between ST and other vital activities in the lives of Iraqi adolescents.

Research consistently shows that excessive ST can adversely affect physical health, mental well-being, and academic performance. Therefore, it is essential for parents, educators, and healthcare professionals to collaborate in educating and guiding adolescents about the importance of limiting ST. Encouraging engagement in alternative activities that foster overall health and well-being is crucial. Our study aligns with existing literature emphasizing the need to promote physical activity, social interactions, and school engagement as key components of a higher quality of life.

Encouraging adolescents to participate in outdoor activities, spend quality time with friends and family, and take breaks from screens can significantly enhance their overall well-being. Additionally, fostering open communication about emotions and mental health, along with providing access to professional support services, are vital steps toward promoting a healthy and fulfilling lifestyle for Iraqi youth.

Future research should employ longitudinal designs and more representative samples to further clarify the causal links between ST and negative outcomes. This will help inform evidence-based interventions aimed at improving the overall quality of life and well-being of adolescents in Iraq. Specifically, exploring the underlying mechanisms of these associations and examining the impact of ST on academic performance will be critical for developing targeted public health strategies that encourage balanced ST habits among Iraqi adolescents.

Competing interests

The authors declare that they have no competing interests.

Abbreviations

The Questionnaire for Screen Time in Adolescents: QueST; Screen time: ST; Quality of life: QOL; Coronavirus disease 2019: COVID-19;

Authors' contributions

All authors contributed equally and significantly to the design, data acquisition, analysis, interpretation, as well as the drafting and revision of this manuscript. All authors read and approved the final manuscript. All authors take responsibility for the integrity of the data and the accuracy of the data analysis.

Availability of data and materials

The data used in this study are available from the corresponding author on request.

Ethics approval and consent to participate

The study was conducted in accordance with the Declaration of Helsinki. The Ethics Committee of the College of Nursing at the University of Kerbala approved this study on October 28, 2022, under approval number UOK.CON.23.013. After explaining the study's purpose, ensuring data confidentiality, and outlining the option to withdraw, written informed consent was obtained from each student and their parent or guardian

Consent for publication

By submitting this document, the authors declare their consent for the final accepted version of the manuscript to be considered for publication.

References

1. Santos L, Reeve R. Screen time and youth health issues: A literature review. Int J E-Learn Dist Educ. 2020;35(1):1-26.

2. Belton S, Issartel J, Behan S, Goss H, Peers C. The differential impact of screen time on children's wellbeing. Int J Environ Res Public Health. 2021;18(17):9143. doi: 10.3390/ijerph18179143. PMID: 34501733; PMCID: PMC8430474.

3. Zhu X, Griffiths H, Xiao Z, Ribeaud D, Eisner M, Yang Y, et al. Trajectories of screen time across adolescence and their associations with adulthood mental health and behavioral outcomes. J Youth Adolesc. 2023;52(7):1433-47. doi:

10.1007/s10964-023-01782-x. PMID: 37148440; PMCID: PMC10175337.

4. Wong CKH, Wong RS, Cheung JPY, Tung KTS, Yam JCS, Rich M, et al. Impact of sleep duration, physical activity, and screen time on health-related quality of life in children and adolescents. Health Qual Life Outcomes. 2021;19(1):145. doi: 10.1186/s12955-021-01776-y. PMID: 33980245; PMCID: PMC8117552.

5. Wong M, Olds T, Gold L, Lycett K, Dumuid D, Muller J, et al; LSAC's child health checkpoint investigator group. Time-use patterns and health-related quality of life in adolescents. Pediatrics. 2017;140(1):e20163656. doi: 10.1542/peds.2016-3656. Epub 2017 Jun 1. PMID: 28759399.

6. Dong X, Ding M, Chen W, Liu Z, Yi X. Relationship between smoking, physical activity, screen time, and quality of life among adolescents. Int J Environ Res Public Health. 2020;17(21):8043. doi: 10.3390/ijerph17218043. PMID: 33142847; PMCID: PMC7662320.

7. Bandura AJ. Social foundations of thought and action. Psychol Theol. 1986;14:341-2. doi:10.4135/9781446221129.n6

8. Saquib J. Social ecological model as a framework for understanding screen time and sedentary behavior among Arab adolescents. Int J Health Sci (Qassim). 2018;12(3):1-2. PMID: 29896064; PMCID: PMC5969784.

9. Wang X, Li Y, Fan H. The associations between screen time-based sedentary behavior and depression: a systematic review and meta-analysis. BMC Public Health. 2019;19(1):1524. doi: 10.1186/s12889-019-7904-9. PMID: 31727052; PMCID: PMC6857327.

10. 10. Abod WS. Bandar Obaid Kh. Association between adolescents' body mass index and excessive use of electronic media. Nurs Midwifery Stud. 2023;12(2):124-9. doi:10.48307/nms.2023.407754.1230

11. Nagata JM, Lee CM, Lin F, Ganson KT, Pettee Gabriel K, Testa A, et al. Screen time from adolescence to adulthood and cardiometabolic disease: A prospective cohort study. J Gen Intern Med. 2023;38(8):1821-7. doi: 10.1007/s11606-022-07984-6. PMID: 36627526; PMCID: PMC10272026.

12. Lua VYQ, Chua TBK, Chia MYH. A narrative review of screen time and wellbeing among adolescents before and during the COVID-19 pandemic: Implications for the future. Sports. 2023;11(2):38. doi:10.3390/sports11020038

13. Goswami P, Parekh V. The impact of screen time on child and adolescent development: a review. Int J Contemp Pediat. 2023;10 (7):1161–5. doi:10.18203/2349-3291.ijcp20231865

14. Alshoaibi Y, Bafil W, Rahim M. The effect of screen use on sleep quality among adolescents in Riyadh, Saudi Arabia. J Family Med Prim Care. 2023;12(7):1379-88. doi: 10.4103/jfmpc.jfmpc_159_23. PMID: 37649757; PMCID: PMC10465044.

15. Muppalla SK, Vuppalapati S, Reddy Pulliahgaru A, Sreenivasulu H. Effects of excessive screen time on child development: An updated review and strategies for management. Cureus. 2023;15(6):e40608. doi: 10.7759/cureus.40608. PMID: 37476119; PMCID: PMC10353947.

16. Zou Z, Xiang J, Wang H, Wen Q, Luo X. Association of screen time-based sedentary behavior and the risk of depression in children and adolescents: Dose-response meta-analysis. Arc Clin

17. Psychiatr. 2021;48(6):235-44. doi:10.15761/0101-60830000000314.

18. Kamaleddine AN, Antar HA, Ali BTA, Hammoudi SF, Lee J, Lee T, et al. Effect of screen time on physical and mental health and eating habits during COVID-19 lockdown in Lebanon. Psychiatry Investig. 2022;19(3):220-8. doi: 10.30773/pi.2021.0239. PMID: 35330563; PMCID: PMC8958203.

18. Santos RMS, Mendes CG, Sen Bressani GY, de Alcantara Ventura S, de Almeida Nogueira YJ, de Miranda DM, et al. The associations between screen time and mental health in adolescents: A systematic review. BMC Psychol. 2023;11(1):127. doi: 10.1186/s40359-023-01166-7

19. Winstone L, Mars B, Haworth CMA, Kidger J. Social media use and social connectedness among adolescents in the United Kingdom: a qualitative exploration of displacement and stimulation. BMC Public Health. 2021;21(1):1736. doi: 10.1186/s12889-021-11802-9. PMID: 34560872; PMCID: PMC8464110.

20. Saunders TJ, Vallance JK. Screen time and health indicators among children and youth: Current evidence, limitations and future directions. Appl Health Econ Health Policy. 2017;15(3): 323-31. doi: 10.1007/s40258-016-0289-3. PMID: 27798796.

21. Madigan S, Eirich R, Pador P, McArthur BA, Neville RD. Assessment of changes in child and adolescent screen time during the COVID-19 pandemic: A systematic review and meta-analysis. JAMA Pediatr. 2022;176(12):1188-98. doi: 10.1001/jamapediatrics.2022.4116. PMID: 36342702; PMCID: PMC9641597.

22. Steiner-Hofbauer V, Schrank B, Mittmann G. Screen time and quality of life in Austrian young adults. J Public Health. 2023:1-5. doi:10.1007/s10389-023-02183-x

23. Yan H, Zhang R, Oniffrey TM, Chen G, Wang Y, Wu Y, et al. Associations among screen time and unhealthy behaviors, academic performance, and well-being in Chinese adolescents. Int J Environ Res Public Health. 2017;14(6):596. doi: 10.3390/ijerph14060596. PMID: 28587225; PMCID: PMC5486282.

24. Borras PA, Vidal J, Ponseti X, Cantallops J, Palou P. Predictors of quality of life in children. J Human Sport Exe. 2011;6:649–56. doi:10.4100/jhse.2011.64.08

25. Wang W, Jiang J, Qi L, Zhao F, Wu J, Zhu X, et al. Relationship between mental health, sleep status and screen time among university students during the COVID-19 pandemic: a cross-sectional study. BMJ Open. 2023;13(12):e073347. doi: 10.1136/bmjopen-2023-073347. PMID: 38070905; PMCID: PMC10729102

26. Tundia M, Thakrar D. Screen time, physical activity, dietary pattern and their interplay among adolescents. Health Promot Physic Activ. 2023;22:1-7. doi: https://doi.org/10.55225/hppa.489

27. Nedjar-Guerre A, Wattelez G, Serra-Mallol C, Frayon S, Galy O. Adolescent screen time and unhealthy food consumption in the context of the digital development in New Caledonia. PLoS One. 2023;18(5):e0285374. doi: 10.1371/journal.pone.0285374. PMID: 37155631; PMCID: PMC10166542.

28. Ali RH, Al Shatari SAE. Ministry of health, iraq: The impact of using the internet and social media on sleep in a group of

secondary school students from Baghdad. AL-Kindy College Med J. 19(2):38-43 doi:10.47723/kcmj.v19i2.954

29. Laftah SA, Abd Ali MB. Stages of change for screen time behavior among high school female students. Mosul J Nurs. 2022;10(3):75-80.

30. AlObaidi A. Iraq: children's and adolescents' mental health under conditions of continuous turmoil. Int Psychiatry. 2011;8(1):4-5. PMID: 31508062; PMCID: PMC6735008.

31. Darya RA. Mental health problems in Iraq: A systematic review. Global Psychiat Archiv. 2022;5(1):26-35. doi: 10.52095/gp.2022.3774.1026

32. Bullinger M, Brütt AL, Erhart M, Ravens-Sieberer U; BELLA Study Group. Psychometric properties of the KINDL-R questionnaire: results of the BELLA study. Eur Child Adolesc Psychiatry. 2008;17:125-32. doi: 10.1007/s00787-008-1014-z. PMID: 19132312.

33. Knebel MTG, da Costa BGG, Dos Santos PC, de Sousa ACFC, Silva KS. The conception, content validation, and test-retest reliability of the Questionnaire for Screen Time of Adolescents (QueST). J Pediatr (Rio J). 2022;98(2):175-82. doi: 10.1016/j.jped.2021.05.004. PMID: 34174211; PMCID: PMC9432249.

34. Essaddam L, Ben Mansour A, Ben Amor A, Ravens-Sieberer U, Klein TM, Ben Becher S. Validation of the Arabic and Tunisian Arabic version of the KINDL questionnaires for children with diabetes type 1. Libyan J Med. 2019;14(1):1537457. doi: 10.1080/19932820.2018.1537457. PMID: 30481145; PMCID: PMC6263104

35. Wiguna T, Minayati K, Kaligis F, Teh SD, Sourander A, Dirjayanto VJ, et al. The influence of screen time on behaviour and emotional problems among adolescents: A comparison study of the pre-, peak, and post-peak periods of COVID-19. Heliyon. 2023;10(1):e23325. doi: 10.1016/j.heliyon.2023.e23325. PMID: 38163166; PMCID: PMC10755312.

36. Cui Z, Zou P, Lin Z, Cao Y, Luo Y. Gender differences in excessive screen time among Chinese high school students in Henan province. Int J Environ Res Public Health. 2022;20(1):721. doi: 10.3390/ijerph20010721. PMID: 36613042; PMCID: PMC9819855.

37. Schaan CW, Cureau FV, Sbaraini M, Sparrenberger K, Kohl Iii HW, Schaan BD. Prevalence of excessive screen time and TV viewing among Brazilian adolescents: a systematic review and meta-analysis. J Pediatr (Rio J). 2019;95(2):155-65. doi: 10.1016/j.jped.2018.04.011. PMID: 29859903.

38. Wilmot EG, Edwardson CL, Achana FA, Davies MJ, Gorely T, Gray LJ, et al. Sedentary time in adults and the association with diabetes, cardiovascular disease and death: systematic review and meta-analysis. Diabetologia. 2012;55(11):2895-905. doi: 10.1007/s00125-012-2677-z. Erratum in: Diabetologia. 2013;56 (4): 942-3. PMID: 22890825.

39. Engel E, Gell S, Heiss R, Karsay K. Social media influencers and adolescents' health: A scoping review of the research field. Soc Sci Med. 2024;340:116387. doi: 10.1016/j.socscimed.2023.116387. PMID: 38039770.

40. Twenge JM, Campbell WK. Associations between screen time and lower psychological well-being among children and adolescents: Evidence from a population-based study. Prev Med Rep. 2018;12:271-283. doi: 10.1016/j.pmedr.2018.10.003. PMID:

30406005; PMCID: PMC6214874.

41. Qiu Z, Jia X, Fu Y, Yang Y. Screen time in the development of cardiovascular diseases: A two-sample Mendelian randomization study. Nutr Metab Cardiovasc Dis. 2024;34(3): 706-17. doi: 10.1016/j.numecd.2023.09.029. PMID: 37996370.

42. Guerrero MD, Barnes JD, Chaput JP, Tremblay MS. Screen time and problem behaviors in children: exploring the mediating role of sleep duration. Int J Behav Nutr Phys Act. 2019;16(1):105. doi: 10.1186/s12966-019-0862-x. PMID: 31727084; PMCID: PMC6854622.

43. Bhatia R, Shyam R, Kumar M Goel NK. A comparative study to assess the quality of life among married and unmarried individuals in university of North India. Int J Rec Adv Multidiscip Res. 2022;9(11):8130-5.